Total No. of Questions : 5]

PA-3402

[5919]-14

M.Sc. (Computer Science)

CSDT - 114 (B) : ARTIFICIAL INTELLIGENCE

(2019 Pattern) (Semester - I)

Time : 2 Hours] ***[Max. Marks : 35***

Instructions to the candidates:

1) ***Question 1 is compulsory.***
2) ***Solve any three questions from Q.2 to Q.5.***
3) ***Questions from 2 to 5 carry equal marks.***

Q1) Solve any five of the following. **[5]**

a) Explain any two fields of AI.

b) Define Search Strategy.

c) State the types of supervised learning.

d) Is the python strings are immutable?

e) State any two approaches for knowledge representation.

f) What is heuristic function?

Q2) Attempt the following: **[10]**

a) i) State any two AI techniques. **[2]**

ii) Explain generate and test algorithm. **[4]**

b) Compare propositional logic and predicate logic. **[4]**

Q3) Attempt the following: **[10]**

a) i) What is a dictionary in python? **[2]**

ii) Explain the different types of machine learning. **[4]**

b) Translate following English statement in FOPL. **[4]**

i) Some girls play chess.

ii) Not all students like both Computer and Marathi.

iii) All Parrots fly.

iv) Every student respects his Teacher.

Q4) Attempt the following: **[10]**

a) i) Write disadvantages of Breadth First Search. **[2]**

ii) Give the state space representation of "water jug problem", where there are 2 jugs of 4L and 3L respectively. We want 2L water in 4L jug. **[4]**

b) Consider the following 3 FOPL statements. Using resolution prove FIDO WILL DIE. **[4]**

i) $\forall x : \text{dog}(x) \rightarrow \text{animal}(x)$

ii) dog(FIDO)

iii) $\forall y : \text{animal}(y) \rightarrow \text{die}(y)$

Q5) Attempt any 2 of the following: **[10]**

a) What is hill climbing? Write algorithm for it. **[5]**

b) Write a python program to check the given number is palindrome or not. **[5]**

c) Given an initial state of a 8-puzzle problem and final state to be reached: **[5]**

2	8	3
1	6	4
7		5

Initial State

1	2	3
8		4
7	6	5

Final State

Find the most cost-effective path to reach the final state from initial state using A* algorithm.

Consider,

$g(n)$ = Depth of node

$h(n)$ = Number of misplaces tiles